

ALIGNMENT PROCEDURE

T9753UHF

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Prepared by : _____

Approved by : _____

1. TRANSMITTER ALIGNMENT (TEST CONDITION: USE 7.4VDC 1.2A SUPPLY)

NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
1.1	Check LCD	<ol style="list-style-type: none"> Switch on the power (SW451), check all segments should display clearly & correctly. Check the current should be <40mA. 	
1.2	Rx / Tx VCO	<ol style="list-style-type: none"> Connect a voltmeter between CV test point and ground Check Rx VCO should be 1.2+/- 0.3V on Frequency 435MHz. Connect PTT button to ground. Check Tx VCO should be 1.5+/- 0.5V on Frequency 435MHz. Release PTT button. Press and hold the MON button monitor green light will be on. 	
1.3	Tx Frequency	<ol style="list-style-type: none"> Connect PPT button to ground and select frequency 435MHz Adjust VC2 until Tx frequency should be 435MHz+/- 0.30kHz. 	
1.4	Tx Power	<ol style="list-style-type: none"> Connect PPT button to ground and select frequency 400MHz and frequency 470MHz Check Tx power should be \geq36dBm at Ant point 	
1.5	Tx Modulation Check CTCSS Tone Dev. Check CTCSS Freq. Error Check Max. Deviation	<ol style="list-style-type: none"> Connect PTT button to ground and Select frequency 435MHz Apply 6mVrms (-44dBV) with 1kHz at mic input. Adjust VR552 until the frequency deviation 1.5k +/- 0.1 kHz and check distortion should less than 3%. And also check if Tx frequency response as below: 300Hz = 1+/- 0.2kHz. and 1.5kHz = 3.0kHz +/- 0.2kHz. Select frequency 400MHz with Code 1, 12, 38 , the CTCSS Dev = 0.6 +0/-0.15 kHz Select frequency 470MHz with code 1, 12,38, the CTCSS Dev = 0.6 +0/-0.15kHz Check CTCSS Code 12 should be 100Hz+/-0.2%. Increased mic input signal to +40dB, check max deviation should less than 2kHz and less than 2.5k with CTCSS. 	
1.6	Tx FM Noise	<ol style="list-style-type: none"> Connect PPT button to ground. Connect 220uF E.Cap to mic input and ground. Check FM noise should less than 300Hz at frequency 400MHz and frequency 470MHz. 	
1.7	Current Drain at max. Dev	<ol style="list-style-type: none"> Connect PTT button to ground and selected frequency 435MHz. Check Tx current should less than 1600 mA with max deviation. 	

2. RECEIVER ALIGNMENT (TEST CONDITION: USE 7.4VDC3A SUPPLY)

NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
2.1	Check Rx Audio Level Rated Audio Output Power	<ol style="list-style-type: none"> Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz. Terminated speaker point with 4 ohm load. Set speaker output level to 1.0V of unit. Check distortion should be less than 3%. Set speaker output level to 1.5Vrms. Check distortion should be less than 4.5%. Set speaker output level to max. Check distortion should <10%. 	

2.2	Check Rx Audio Response	<ol style="list-style-type: none"> Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz. Set speaker output to 1.0V of unit with input signal is 1kHz as reference point (0dB). Check Freq. Response : $300\text{Hz} = -2 \pm 3\text{dB}$ and $2.5\text{kHz} = -6 \pm 3\text{dB}$ 	
2.3	Rx Sensitivity	<ol style="list-style-type: none"> Set RF generator to 435MHz and set RF output to -47dBm with 1.5kHz deviation/1kHz. Set speaker output to 1.0V of unit and decrease RF output level to 12 dB sinad. Check RF output level of RF generator should less than -123dBm. Set RF generator to CH15 with 2.5kHz dev/1kHz.and decrease RF output level to 12 dB sinad. The RF output level should less than -123dBm. 	
2.4	S/N ratio	<ol style="list-style-type: none"> Set RF generator to 435MHz and set RF output to -47dBm without modulation. Set speaker output to max of unit. Check (speaker output) S/N ratio should be $>40\text{dB}$. 	
2.5	Rx Audio with CTCSS Check RX Sens. with CTCSS Check CTCSS Tone Decoder	<ol style="list-style-type: none"> Select 435MHz with CTCSS Code 12. Apply -47dBm RF signal with 1.5kHz deviation/1kHz and external input of RF Gen with 0.6kHz deviation/100Hz as CTCSS code. A 1kHz signal will be heard from speaker. Set speaker output to 1.0V and decrease RF level to 8dB sinad. The speaker should be on. Increase RF output level to -47dBm and change the external input Freq. of RF Gen. to 200Hz. The speaker should be off. 	

3. DC CURRENT DRAIN

(TEST CONDITION: USE 7.4VDC 3A SUPPLY ONLY)

NO.	ITEM	ALIGNMENT METHOD (WITH PRODUCTION SPEC.)	REMARKS
3.1	Check Battery Low	<ol style="list-style-type: none"> Set the power supply to $5.1\text{V} \pm 0.15\text{V}$. Battery low icon should be flashing. 	
3.2	Check Standby Current (squelched)	<ol style="list-style-type: none"> Check the standby current should less than 40mA(squelched). 	
3.3	Max . Audio Output	<ol style="list-style-type: none"> Adjust speaker volume to set speaker output level $>1.0\text{V}$ and distortion 5%. Check current should less than 200mA. 	
3.4	Check charging current	<ol style="list-style-type: none"> Switch off the unit. Check charging current should less than $300 \pm 30\text{mA}$ with $9\text{Vdc}/800\text{mA}$ DC adaptor. 	

Notice: The other functional tests, please referred to T9753 Operation Specification.

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